Please cancel claims 2-11 and 13-17 without prejudice. The following listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A calcium fluoride crystal~~, characterized in that the calcium fluoride crystal is produced in accordance with a method for producing calcium fluoride crystal on the basis of refining a raw material of calcium fluoride and causing crystal growth of the refined calcium fluoride, the method including a process of raising a purity of the calcium fluoride to complement the refining, such that a transition density in crystal is not greater than $1 \times 10^5/cm^2$, and that dispersion of transition density inside an effective portion in crystal is in a range of $\pm 5 \times 10^4/cm^2$~~ having a transition density in the crystal that is not greater than $1 \times 10^5/cm^2$, and a dispersion of transition density inside an effective portion of the crystal that is in a range of $\pm 5 \times 10^4/cm^2$

Claims 2-11 (cancelled).

12. (currently amended) An optical element manufactured from a calcium fluoride crystal as recited in ~~Claim~~claim 1.

13. (currently amended) An optical element manufactured from a calcium fluoride crystal as produced in accordance with a method as recited in claim 18~~any one of Claims 2 – 8~~.

Claims 13-17 (cancelled).

18. (new) A calcium fluoride crystal manufactured in accordance with a calcium fluoride crystal producing method that comprises the steps of:

mixing a raw material of calcium fluoride and a scavenger at a predetermined proportion to obtain a first mixture;

fusing the first mixture in a crucible to refine the raw material of calcium fluoride;

mixing the refined calcium fluoride and a scavenger at a predetermined proportion, to obtain a second mixture; and

fusing the second mixture in a crucible to cause growth of a calcium fluoride crystal;

wherein said method includes a baking process for at least one of the first and second mixtures to be performed before it is or they are fused in the crucible.

19. (new) A calcium fluoride crystal according to claim 18, wherein the first mixture contains a scavenger of 0.001 to 0.1 mol%

20. (new) A calcium fluoride crystal according to claim 18, wherein the first mixture contains a scavenger of 0.0005 to 0.05 mol%.

21. (new) A calcium fluoride crystal according to claim 18, wherein the transition density in the calcium fluoride crystal is not greater than 1×10^5 /cm^2, and wherein dispersion of the transition density is not greater than $\pm 5 \times 10^4$/cm^2.

22. (new) A calcium fluoride crystal according to claim 18, wherein in said baking process, the mixture is heated in a vacuum ambience or a reduced pressure ambience.

23. (new) A calcium fluoride crystal according to claim 18, wherein in said baking process, the mixture is heated in a gas-flow ambience in which a gas flows so as to promote removal of a substance adhered to the mixture.